

Graft hybrids.—WINKLER³³ has published a further account of his experiments with graft hybrids of *Solanum nigrum* and *S. lycopersicum*. In all, thirteen graft hybrids have appeared, belonging to five different types, which are named *S. tubingense*, *S. Darwinianum*, *S. Gaertnerianum*, *S. proteus*, and *S. Koelreuterianum*. Of these forms the first three resemble most *S. nigrum*, and the last two resemble the tomato, *S. proteus* being very variable in leaf shape and having leaves similar to *S. Darwinianum*. *S. Gaertnerianum*, like many sexual hybrids, often has sterile anthers. *S. Darwinianum* and *S. Koelreuterianum* are very unlike in their vegetative organs, but similar in their flower characters. *S. proteus* produces reversions to the tomato, which it most resembles, while *S. tubingense* reverts to the nightshade, its nearest parent.

Some viable seeds are produced by the graft hybrids, but the percentage of germination is very small. In *S. tubingense* the length of time required for ripening the fruit is short, like that of the nightshade, while the maturing time for the seeds is intermediate, and hence the ripened fruit contains immature seeds.

The chimeras described in WINKLER's previous papers also recur, and some others are of peculiar character; e. g., one chimera was *S. lycopersicum* on one side and *S. tubingense* on the other, and another was composed of the two graft hybrid forms, *S. tubingense* and *S. proteus*. In *S. nigro-tubingense* one flower had two white petals and three yellow. *S. Darwinianum* similarly originated from a chimera which was partly *S. nigrum* and partly *S. Darwinianum*, and a pure shoot of the latter was obtained only after four decapitations of this branch. *S. Gaertnerianum* appeared five times on different grafts, in some cases as an independent shoot and in others from a chimera.

The forms are all held to be true graft hybrids and not mutations, because they are intermediate between the parents. WINKLER thinks that graft hybrids differ from sexual hybrids in their marked pleiotypy, but it is too early to say what the cause of this may be.—R. R. GATES.

Heredity in the pea.—Two papers by DARBISHIRE³⁴ deal with heredity in the pea. The first is a very interesting analysis of the types of starch grain in round and wrinkled hybrid peas. It is to be hoped that this valuable paper will lead to many other studies of a similar sort, because very little attention has been paid to the ontogenetic development of Mendelian characters. GREGORY³⁵ had previously shown that round and wrinkled peas possess different types of starch

³³ WINKLER, HANS, Weitere Mitteilungen über Pfropfbastarde. Zeitschr. Bot. 1:315-345. pl. I. figs. 4. 1909.

³⁴ DARBISHIRE, A. D., On the result of crossing round with wrinkled peas, with especial reference to their starch grains. Proc. Roy. Soc. London B 80:122-135. figs. 6. tables 8. 1908.

———, An experimental estimation of the theory of ancestral contributions in heredity. Proc. Roy. Soc. London B 81:61-79. tables 8. 1909.

³⁵ GREGORY, R. P., The seed characters of *Pisum sativum*. New Phytol. 2:226-228. 1903.